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Docket No.
58959.0024

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

DAVID A. MONROE

For: **METHOD AND APPARATUS FOR SENDING AND RECEIVING FACSIMILE TRANSMISSIONS OVER A NON-TELEPHONIC TRANSMISSION SYSTEM**

Enclosed are:

Certificate of Mailing with Express Mail Mailing Label No. **EL283360129US**

TEN (10) sheets of drawings.

A certified copy of a application.

Declaration Signed. Unsigned.

Power of Attorney

Information Disclosure Statement

Preliminary Amendment

Verified Statement(s) to Establish Small Entity Status Under 37 C.F.R. 1.9 and 1.27.

Other:

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	19	- 20 =	0	x \$9.00	\$0.00
Indep. Claims	4	- 3 =	1	x \$39.00	\$39.00
Multiple Dependent Claims (check if applicable)	<input type="checkbox"/>				\$0.00
				BASIC FEE	\$380.00
				TOTAL FILING FEE	\$419.00

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RECEIVED

**METHOD AND APPARATUS FOR SENDING AND RECEIVING
FACSIMILE TRANSMISSIONS OVER A NON-TELEPHONIC
TRANSMISSION SYSTEM**

Inventor: David A. Monroe

5 This is a continuation in part application of Serial No. 08/815,026 filed March 14, 1997 and allowed on March 1, 1999.

BACKGROUND OF THE INVENTION

Field of the Invention

The subject invention is generally related to facsimile transmission of documents, commonly known as fax systems, and is specifically directed to a fax system for sending documents and printed materials via distributive communication networks such as, by way of example, the Internet.

Discussion of the Prior Art

Facsimile transmission of documents and printed matter is well known. In a typical application, the document is fed through a transmission machine, where the printed or graphic material on the hard document is converted into a digital signal. This signal is then transmitted in real time over a telephone line to a compatible receiving machine where it is decoded and a facsimile document is reproduced.

Over the years, numerous changes have been made in this basic concept to improve both the quality and the efficiency of the transmission. Most receiving units still record and encode the information on a line-by-line feed. Others store the entire document code prior to initiating transmission and store the entire received document prior to reproduction. Still other systems utilize memory capacity to permit storage of the documents during normal business hours for transmission during off hours. Large volume users have incorporated comprehensive data compression and reduction schemes in order to reduce the amount of data required to be transmitted.

All of these various improvements have been made to reduce the amount of on-line time per transmission. Since transmission is almost always via public telephone lines, both congestion and expense are issues. This is particularly true when transmitting documents over domestic long distance lines or international telephone systems. Enormous savings could be achieved by a facsimile transmission system which is not dependent upon long distance and international public telephone lines.

SUMMARY OF THE INVENTION

The subject invention is directed to a facsimile transmission system which does not require the use of long distance or international telephone systems in order to transmit documents over long distances. Instead the "fax" system of the present invention utilizes the Internet, permitting fax 5 transmission via local telephone service and Internet communication, or, in the alternative, directly over a network system without use of public access communication lines such as telephonic systems.

In the preferred embodiment, the fax system is also fully compatible with prior art systems and can send and receive documents via telephone lines as well as via other distributive communication networks such as, by way of example, the Internet. One significant advantage of the 10 system of the subject invention is the ability to incorporate printed documents and graphic material, as well as computer generated documents and graphic material, into the fax system.

While the most significant advantage of the network fax system of the subject invention is the elimination of the use of costly public telephone carriers, the overall versatility of the system provides additional advantages over the prior art. For example, documents faxed into the system via 15 prior art telephonic systems can be readily re-transmitted over the Internet. Likewise, documents transmitted over the Internet in the well known manner, e.g., E-mail, can be converted and retransmitted via prior art telephonic fax systems.

In addition, the network fax system of the subject invention can serve as an economical scanner, converting hard documents and graphic material into machine readable digital code which 20 can then be transmitted directly into a computer based system for reformatting in a word processing system and the like. Likewise, the information in the computer system can be decoded and printed at the fax machine.

The versatility provided by the method and apparatus of the subject invention permits a common fax machine to become a printer and a scanner, as well as an interface to the distributive 25 networks. This permits stations not on the network to communicate with the network via facsimile document transmission and permits the network users to communicate with the remote station.

All of this can be accomplished utilizing standard local telephone hookup between a user station and the network, permitting worldwide communication via a network such as the Internet without the use of long distance and international telephonic carriers.

30 The heart of the system of the subject invention is an interface positioned intermediately of a standard telephone line, a fax machine, and a computer. The interface is software supported at the computer and is adapted to route the signals therethrough to the computer for storage or for transmission via a selected network, or over a standard telephonic line, both to and from a standard fax machine.

In the preferred embodiment, the interface is inserted between the fax machine, the P.C., and the standard telephone line. The system is also adapted for use with other communication links and devices such as by way of example, ethernet, the world wide web and the like. The interface is also connected directly to a computer base such as a typical personal computer system, which permits communications between the network, the fax machine and the standard telephone system.

All of the software support for the system is loaded into the standard computer base. The interface permits the fax signal on the line between the public telephone system and the fax machine to be diverted to the computer where it is converted by the software into an acceptable Internet format. Signals from the Internet are converted into an acceptable fax format whereby they can be received by the local fax machine or transmitted over the standard telephone line to a remote fax system.

It is, therefore, an object and feature of the subject invention to provide a facsimile transmission system for permitting long distance fax transmission without the use of long distance or international telephone service.

It is a further object and feature of the subject invention to provide a facsimile transmission system that permits "faxed" documents to be transmitted and received via distributive data communication networks.

It is an additional object and feature of the subject invention to provide a facsimile transmission system which permits conversion of documents from any source into a computer into a standard facsimile format for transmission and reception via a standard facsimile transmission system.

Other objects and features of the invention will be readily apparent from the accompanying drawings and detailed description of the preferred embodiment.

Brief Description of the Drawings

Fig. 1 is a flow diagram of a system incorporating the features of the subject invention.

Fig. 2 is a diagrammatic view of the activation combinations of the interface of the subject invention.

Fig. 3 is a more detailed flow diagram of the interface in accordance with the subject invention.

Fig. 4 is an alternative embodiment, similar to Fig. 3.

Detailed Description of the Preferred Embodiment

As shown in Fig. 1, the subject invention is utilized in combination with a standard computer based system such as, by way of example, the personal computer 10. As is typical, the computer 10 is connected to a modem 12, which may be either internal or external as shown. In a typical application, the modem may be used to connect the computer system to a distributive network such

am activation signal for initiating the facsimile machine when a standard incoming telephone "ring" signal is not present. The ring generator 44 communicates directly with the computer via cable 20 directly with the local facsimile machine 26 via the interface 26. A parallel switch 48 is also present to selectively initiate the ring generator. Where desired, cable 20 can also be connected directly to 5 the modem and through a controller 50 to a switch 52 and to the ring generator 44 to signal an incoming fax directly from the network.

As more specifically shown in Fig. 4, the system of the present invention is adapted for converting any of a variety of computer generated data signals to a facsimile format, and vice versa. For example, a data signal received by the computer 10 from a network source 14 is output on cable 10 20 and introduced directly to a local facsimile machine 26 via interface 18. The ring generator 44 will activate the facsimile machine by providing a simulated "ring" signal. Conversely, the local facsimile machine 26 may be used to receive hard copy data and via the interface 18 and dedicated cable 20, introduce the data into the computer 10 for transmission over a network line 14.

The telephone hook-up 22 shown in Fig. 3 is used when a remote facsimile machine is communicating either directly with the facsimile machine 26 in the normal manner, or with the computer 10 for transmission over the selected distributive network.

The facsimile system of the subject invention is very versatile in that it permits the local fax machine 26 to selectively transmit inputted and scanned documents to remote fax systems via telephone line 22, to the computer for processing via cable 20 and to remote fax locations via the Internet 14. The local facsimile machine becomes an inexpensive scanner source for scanning documents directly into the computer. The system of the subject invention also permits documents received via the Internet (whether originating as facsimile transmissions, E-mail or other) or documents generated at the computer or direct facsimile transmissions via telephone line 22 to be printed directly at the local facsimile machine 26, potentially eliminating the need for a separate 25 printer 16.

The facsimile interface and transmission system of the subject invention is an efficient method and apparatus for transmitting and receiving documents via the distributive communication networks such as the Internet as well as via direct computer communication and standard fax transmission, without requiring the use of additional peripheral hardware components. While certain 30 features and embodiments of the invention have been described in detail herein, it will be readily understood that the invention encompasses all modifications and enhancements with the scope and spirit of the following claims.

CLAIMS

What is claimed is:

1. A facsimile transmitting/receiving system comprising a standard facsimile machine and a computer based system in communication with the standard facsimile machine, the system comprising:

a. an interface positioned intermediately of and in communication with both the

5 facsimile machine and the computer;

b. a line for receiving and sending facsimile signals in communication with the interface for selectively communicating directly with the facsimile machine and the computer; and

c. means for converting encoded documents to formats compatible with computer supported systems and with the facsimile machine.

2. The facsimile system of claim 1, wherein said means is further adapted for converting facsimile signals to a format for transmission over distributive communication networks and for converting network transmitted signals in a format for transmission over a facsimile transmission line.

3. The facsimile system of claim 2, wherein said interface further includes means for sending and receiving facsimile signals over a standard telephone line.

4. The facsimile system of claim 2, wherein said interface further includes means for sending and receiving facsimile signals between the computer and the facsimile machine.

5. The facsimile system of claim 3, wherein said interface further includes means for sending and receiving facsimile signals between the facsimile machine and the telephone line.

6. The facsimile system of claim 3, wherein said interface further includes means for sending and receiving facsimile signals between the computer and the telephone line.

7. The facsimile system of claim 1, the interface further comprising a signal generator for producing a signal whenever a facsimile signal is transmitted to the facsimile machine.

8. The facsimile system of claim 7, wherein said signal generator produces a simulated ring activation signal to simulate a telephone ring whenever a facsimile signal is to be transmitted to the facsimile machine.

9. A method for transmitting a facsimile signal from a local station to a remote station via a distributive communication network comprising the steps of:

- a. generating a facsimile signal utilizing a standard facsimile machine at the local station;
- 5 b. converting the signal to a format compatible with the network; and
- c. transmitting the converted signal via the network to a remote station.

10. The method of claim 9, wherein both the local station and the remote station are facsimile machines, and further comprising the steps of:

- a. receiving the converted, transmitted signal at the remote station;
- b. reconverting the transmitted signal to a facsimile format; and
- 5 c. receiving the reconverted, transmitted signal at a standard facsimile machine.

11. A method for transmitting a facsimile signal from a local station to a remote station via a distributive communication network comprising the steps of:

- a. generating a facsimile signal at the local station;
- b. converting the signal to a format compatible with the network; and
- 5 c. transmitting the converted signal via the network to a remote station.

12. The method of claim 11, wherein the generated signal is received at the local station via a telephone line.

13. The method of claim 11, wherein the generated signal is received at the local station via a local facsimile machine.

14. The method of claim 11, wherein the local station includes a telephone transmission line, a local facsimile machine and a network interface and wherein the facsimile signal at the local station can be transmitted/received selectively by any of the telephone transmission line, the local facsimile machine and the network interface.

15. The method of claim 14, wherein the network interface is a personal computer.

16. The method of claim 15, wherein the facsimile signal at the local station may be transmitted directly to the computer for manipulation by additional software support programs.

17. An interface for use in combination with a facsimile receiving/sending station and an Internet interface, comprising means for converting a signal to be transmitted/received by the facsimile station to/from a format compatible with the network.

18. The network of claim 17, further comprising a telephone line in communication with the interface, and means for selective directing a facsimile signal between the telephone line, the network interface and the facsimile receiving/sending station.

19. The network of claim 18, wherein said network interface comprises a personal computer.

ABSTRACT

An interface is provided for connecting a standard telephone line and/or a standard facsimile machine with a distributive communication network interface such as a personal computer, whereby facsimile signal present on the telephone line or at the facsimile machine may be transmitted via the Internet to a remote station without the use of long distance or international telephone signal carriers. The facsimile signal may be sent or received via the network using the network, without interfering with the capability to receive and send facsimile signals in the normal manner via a standard telephone line.

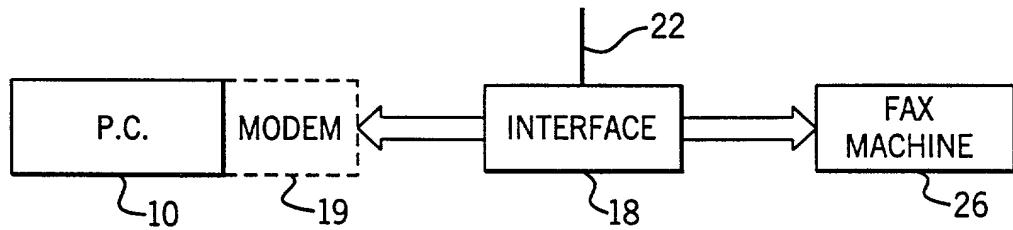


FIG. 1

G 00000000 - 00000000 - 00000000 - 00000000

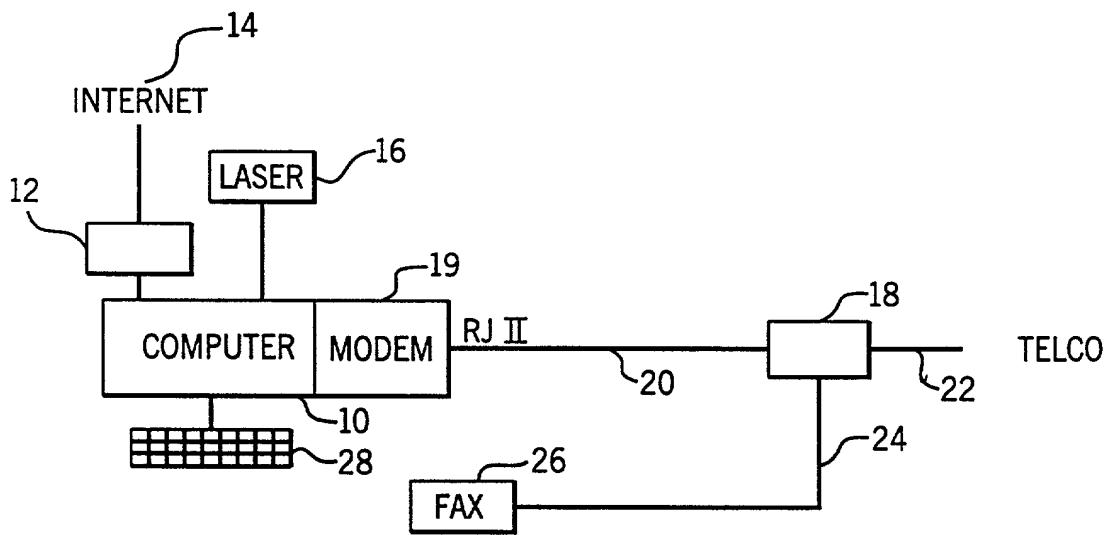


FIG. 2

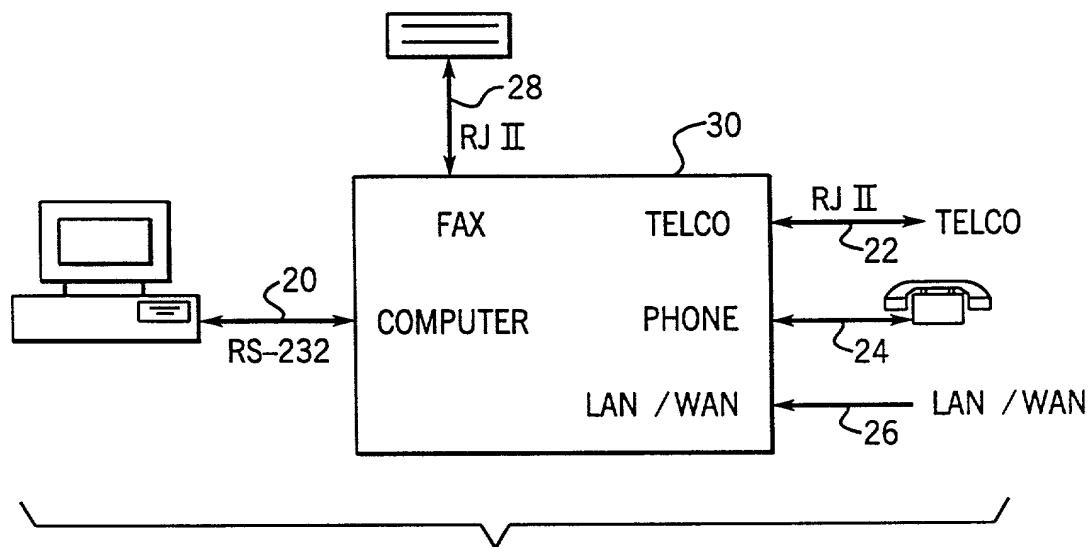


FIG. 3A

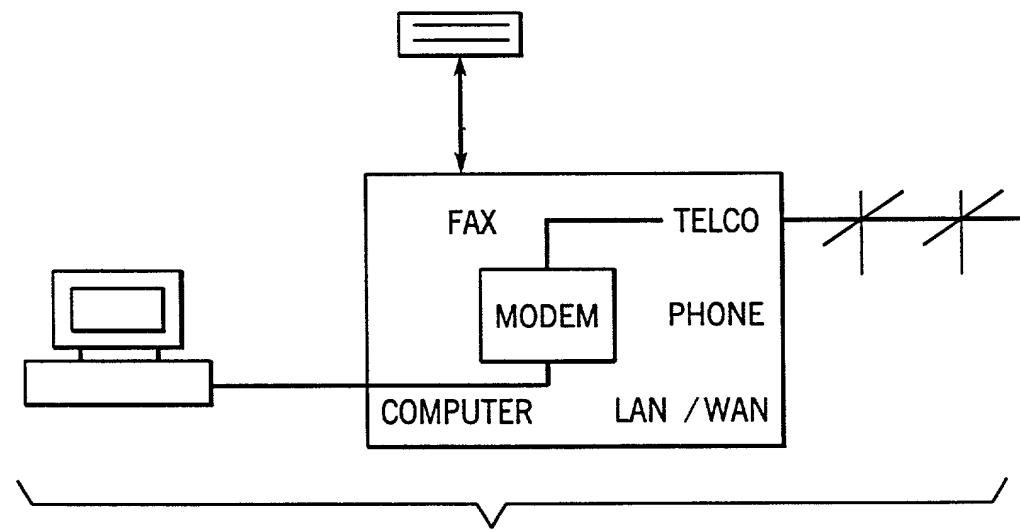


FIG. 3B

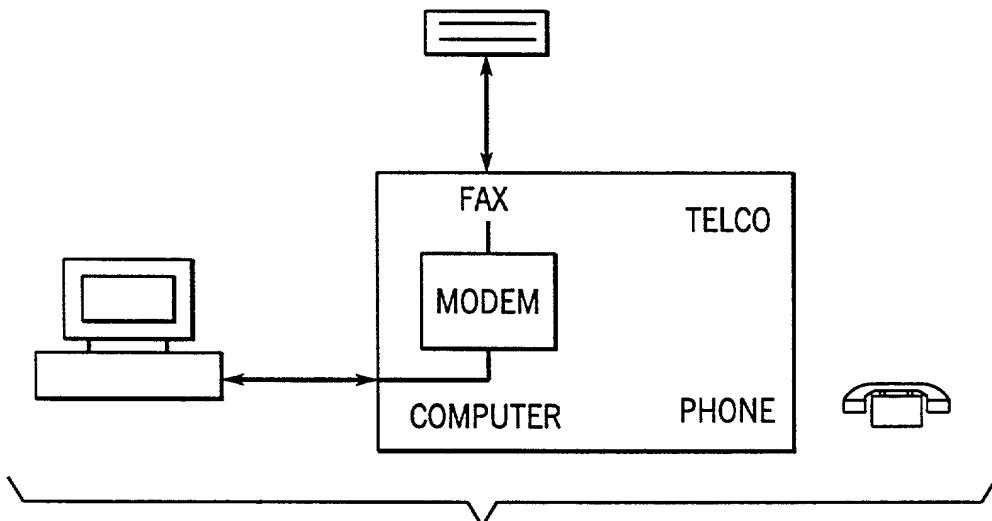


FIG. 3E

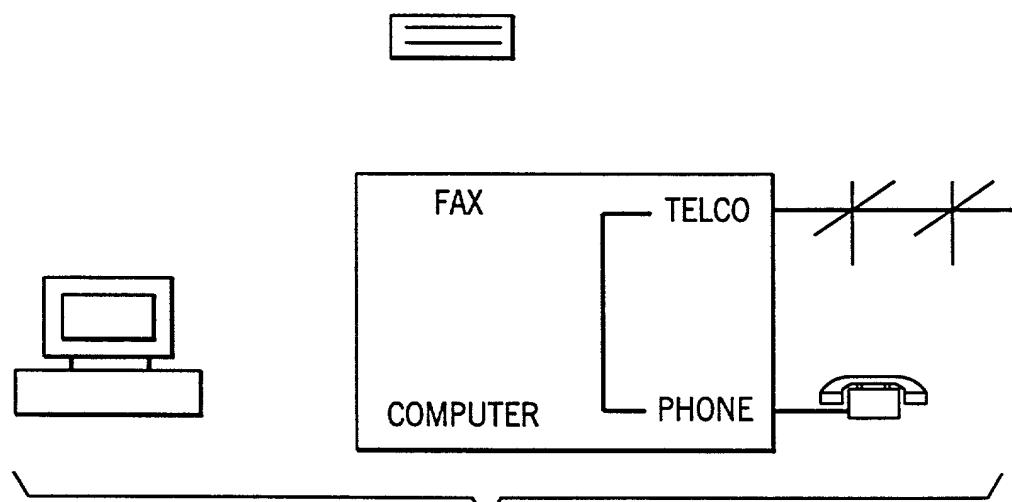


FIG. 3F

FIG. 3G

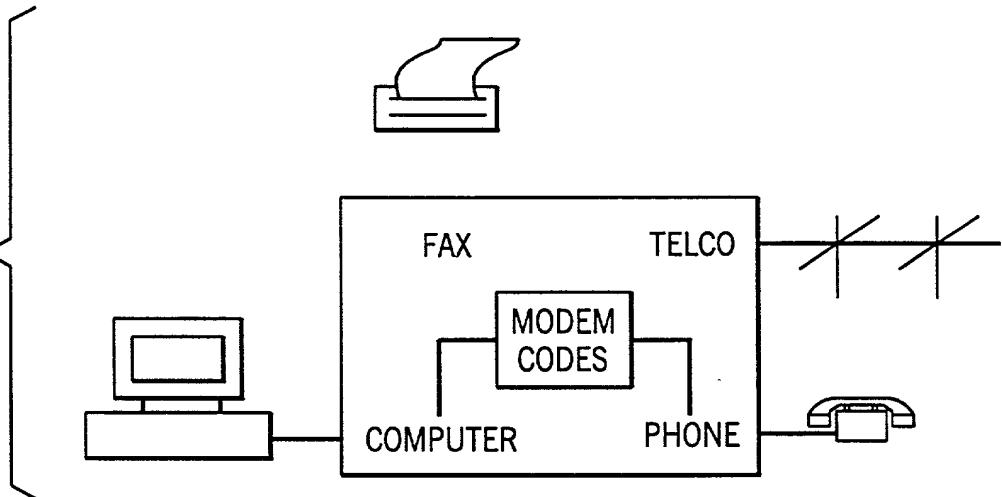


FIG. 3H

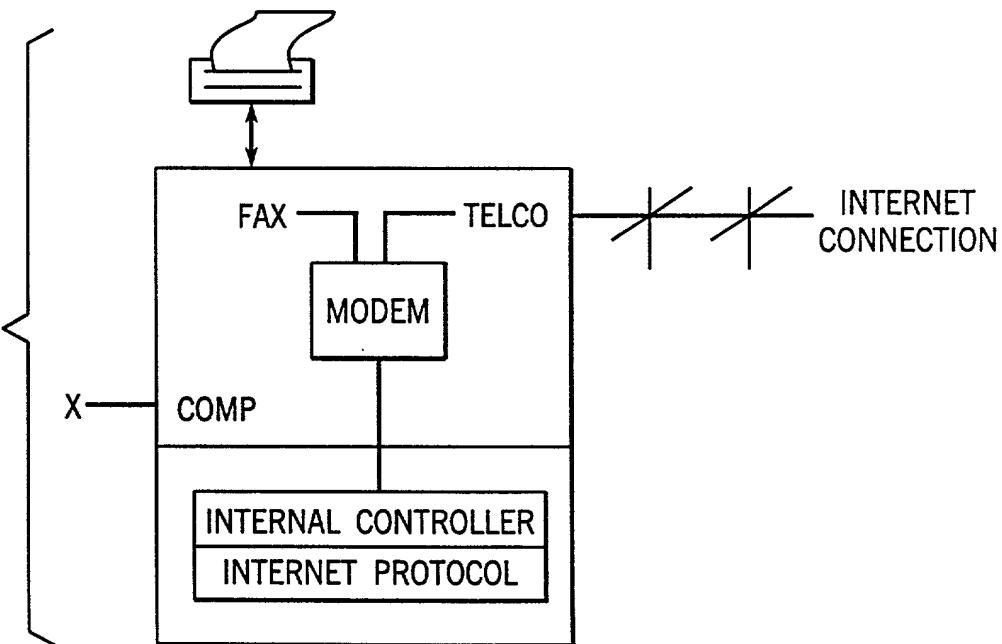


FIG. 3I

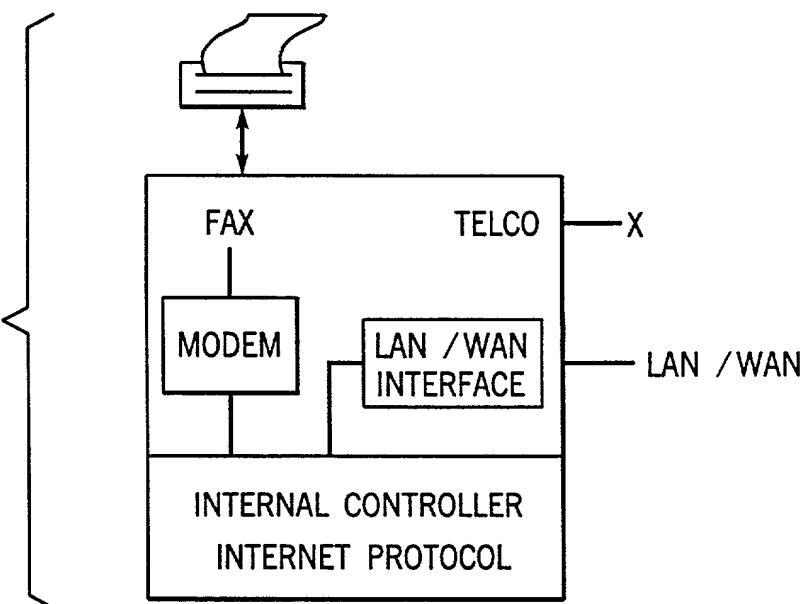


FIG. 3J

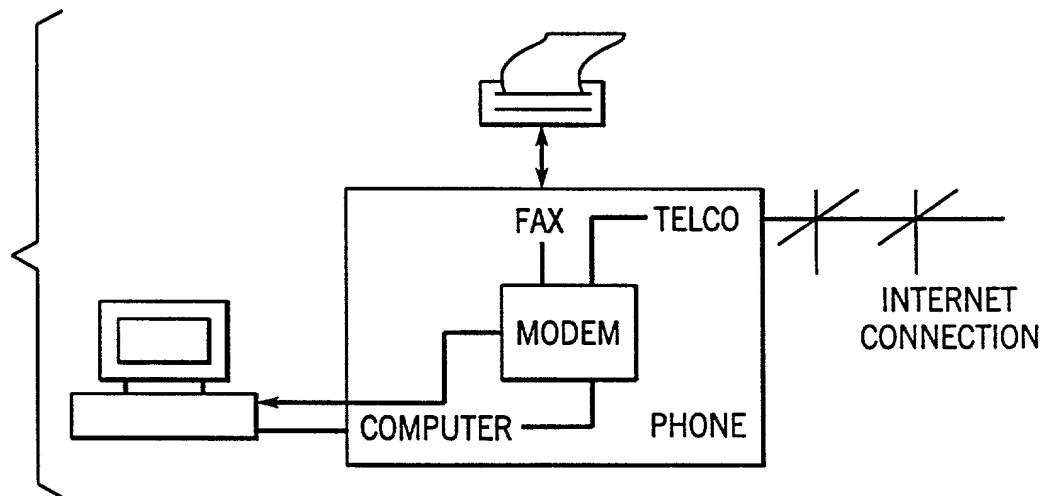


FIG. 3K

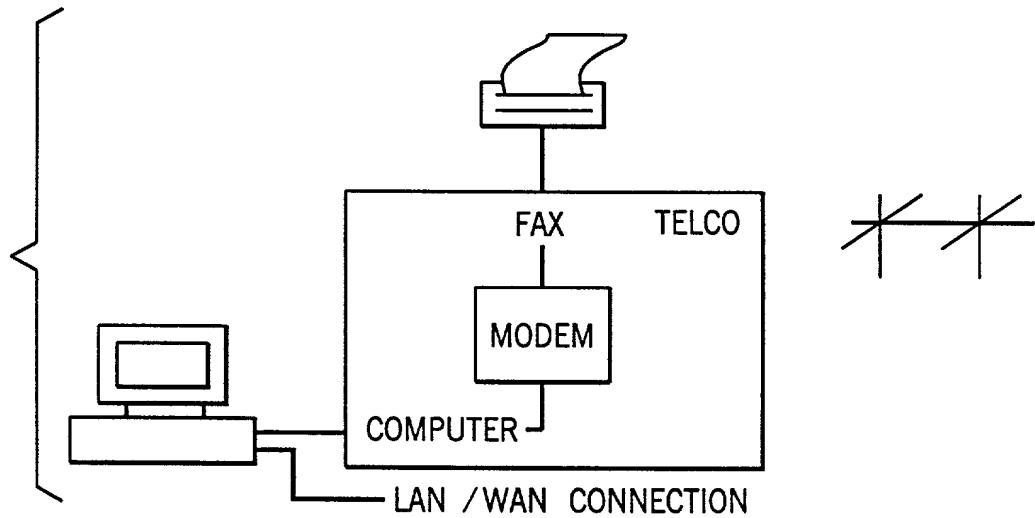
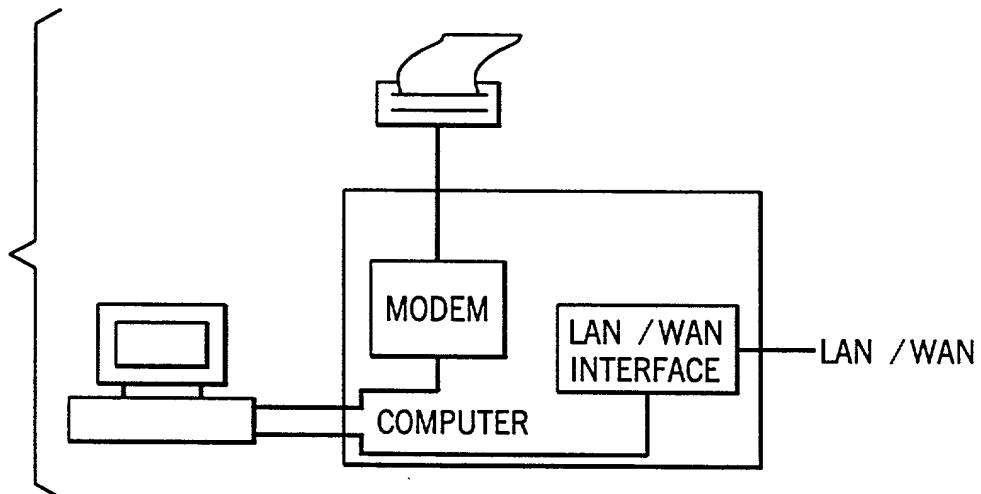


FIG. 3L



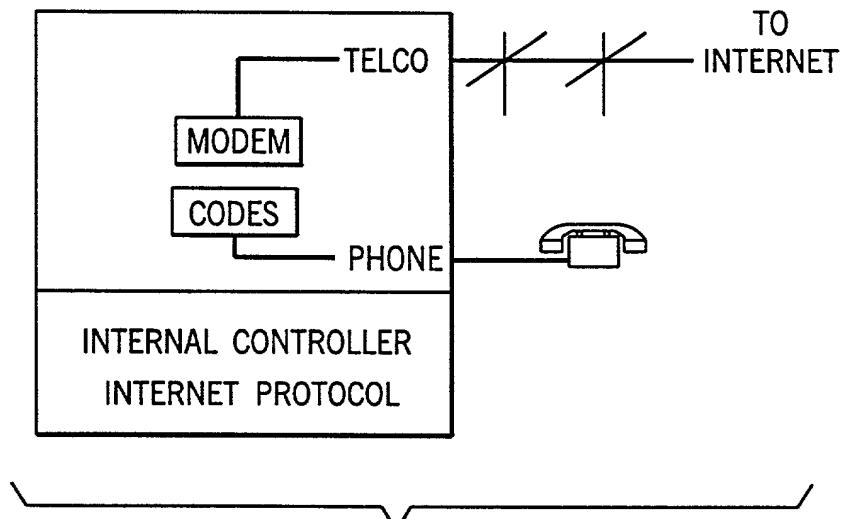


FIG. 3M

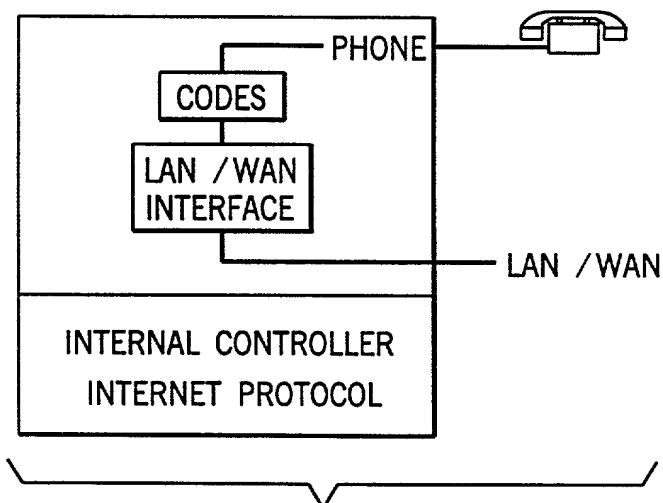


FIG. 3N

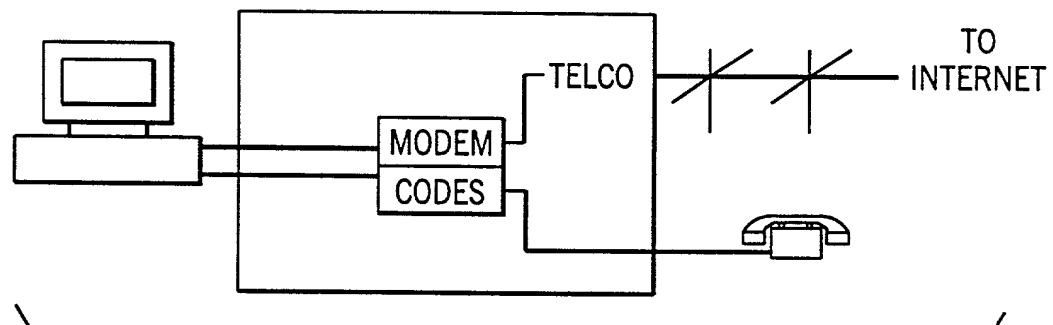


FIG. 3 O

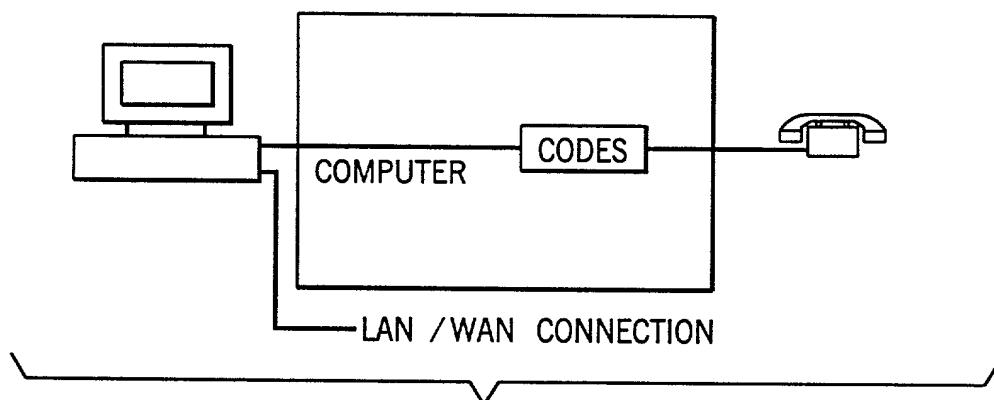


FIG. 3P

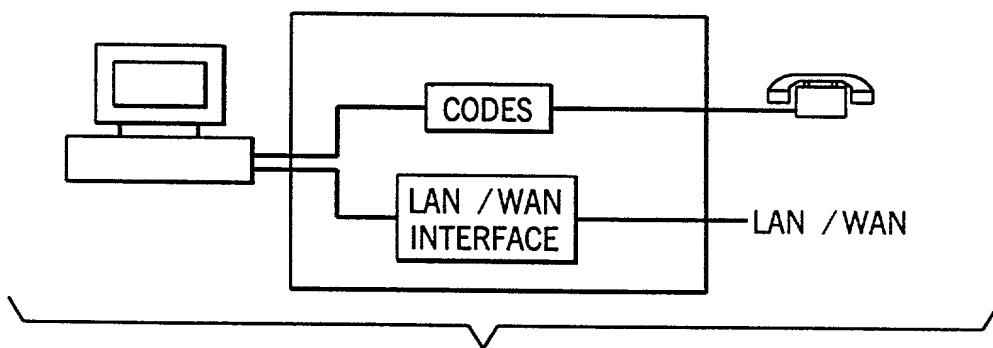


FIG. 3Q

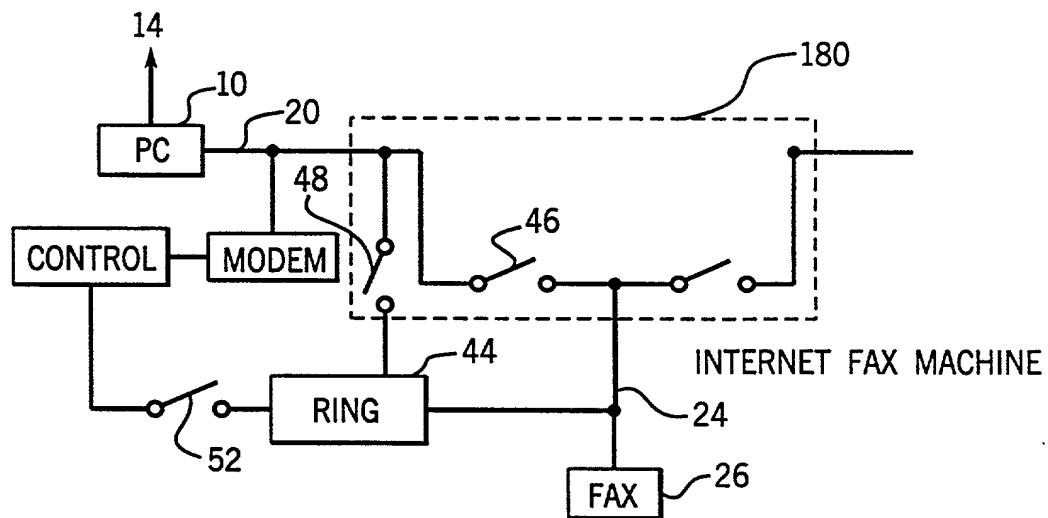
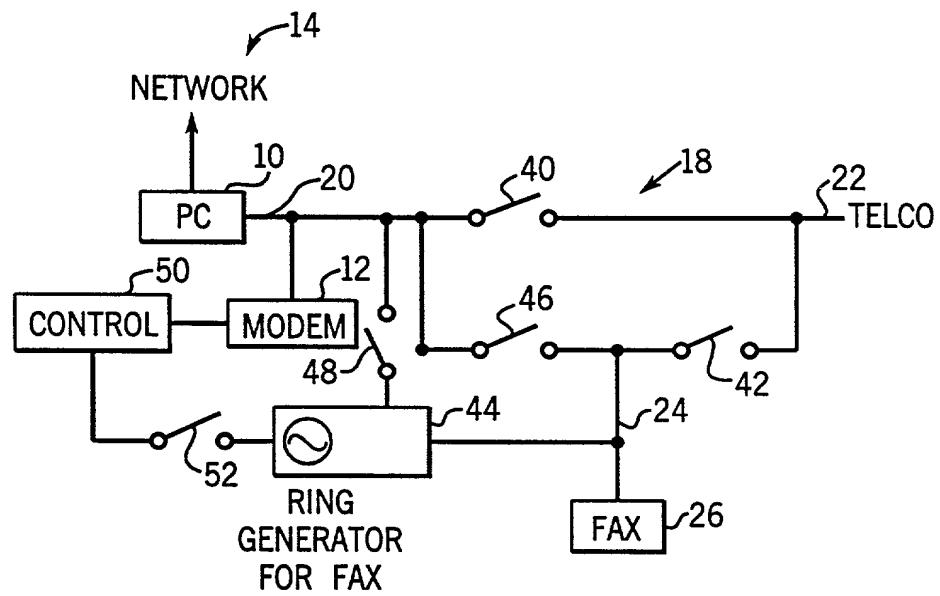


FIG. 5